Return, Reuse and Recycling of IT Products: The German / European Approach

1. Background

Each year millions of IT equipments are manufactured and sold worldwide - and the business is still growing. This development leads to an increase in waste of electrical and electronic equipment (WEEE). In 1998, 6 million tonnes of waste of electrical and electronic equipment were generated. This is 4% of the municipal waste stream and the volume of WEEE is expected to increase 3-5% per annum. In 12 years, therefore, the amount of WEEE will have doubled. More than 90% of WEEE is landfilled, incinerated and recovered without any pre-treatment. A large proportion of various pollutants which can be found in the municipal waste stream, coming from WEEE. Some pollutants are containing hazardous substances.

This paper describes the existing and upcoming policy mix in Europe and especially in Germany that require manufacturers to take back used IT-products, to reuse components or to recycle them. Afterwards the ecological and economic effectiveness of the various measures shall be evaluated and discussed as well as changes in product design towards green products. Further, it shall be discussed where policy co-ordination on an international level would be desirable.

The paper is intended to be the basis for a discussion on the effects of laws and directives on IT-products.

2. Existing and coming policy mix

Different laws and directives have an effect on manufactures to take back, reuse or recycle used IT-products. An overview is given in Annex I. In the following chapter the main laws, agreements and directives in EU and Germany effecting the IT-Industry will be described.

2.1 Laws, Treaties, Directives in the European Union

a) Waste Electrical and Electronic Equipment Directive (WEEE directive), 6 th draft (European Commission, 2000a)

The objectives of the proposed directive on Waste Electrical and Electronic Equipment (WEEE) are:

- the prevention of waste of electrical and electronic equipment;
- to increase re-use, recycling and other forms of recovery thereby contributing to a higher level of environmental protection and encouraging resource efficiency;
- to improve the environmental performance of all operators involved in the life cycle of electrical and electronic equipment, particularly those involved in the treatment of WEEE.

The proposal covers a wide range of electrical and electronic equipment that fall within a voltage range of up to 1,000 volts AC and 1,500 volts DC and that are contained in a list of 10 categories of EEE[1] (Article 4). In this paper only those parts of the directive that apply to IT-products will be described and discussed.

The main provisions of the proposal are as follows:

Separate collection (Article 4)
- Member States shall take the necessary steps to ensure that systems are set up to enable private households to return WEEE free of charge.
- When distributors supply a new product, they must also offer to take back free of charge all similar products, provided that it is contaminant free.
- Producers must provide for the collection of WEEE from holders other than private households.
- Member States must endeavour to achieve, no later than 1 January 2006, a minimum rate of separate collection of WEEE from private households of 4 kg per inhabitant per year.

Treatment (Article 5)
- Producers must set up systems to provide for the treatment of WEEE.
- Treatment must include removal of all fluids, as well as the selective treatment of a range of materials and components.
- Entities carrying out treatment operations must obtain permits and meet certain technical requirements.

Recovery (Article 6)
- Producers must set up systems to provide for the recovery of separately collected WEEE.
- For certain categories of equipment, by 1 January 2006, producers must meet specified recovery rates. Within those recovery rates producers must meet specified rates for the reuse and recycling of components, materials and substances.

Financing (Articles 7 and 8)
- Private households must be able to return such waste free of charge.

[1] The 10 categories are: large household appliances; small household appliances; IT and telecommunication equipment; consumer equipment; lighting equipment; electrical and electronic tools; toys; medical equipment systems; monitoring and control instruments; and automatic dispensers

- 5 years after the directive has entered into force, producers must provide for the financing of the collection of WEEE from private households which has been deposited at collection facilities, as well as the treatment, recovery and disposal of WEEE.
- Producers may comply by means of collective or individual systems.
- For products placed on the market before the producers' financing obligation enters into force, all existing producers must share the costs of financing.
- For WEEE from users other than private households, the financing must be covered by agreements between producer and user at the time of purchase.

Information (Article 9)

- Users in private households must be given certain information, for example on the available return and collection systems.
- Producers must label equipment, which shall not be disposed together with ordinary waste, with a crossed-out bin.
- Producers must provide certain information to treatment facilities, for example, information on certain components and materials in the equipment.

The member states of the Union are required to implement the directive within 18 months of the directive being adopted. They must further provide information on equipment put on the market, collected and recycled, and the implementation of the directive.

The Commission proposes a committee procedure (Article 14) to provide for the review of the treatment requirements, technical requirements for treatment facilities, and use of the separate collection label, in order to adapt them to scientific and technical progress.

2. Restriction of the use of certain hazardous substances in electrical and electronic equipment directive (ROS directive), 6 th draft (European Commission, 2000b)

The proposed directive on the "Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment" (ROS) aims to harmonise the laws of the member States that restrict the use of hazardous substances in electrical and electronic equipment, and to contribute to the environmentally sound recovery and disposal of WEEE containing such substances.

The proposed ROS directive requires the substitution of lead, mercury, cadmium, hexavalent chromium, and certain flame-retardants (polybrominated biphenyl's - PBB; and polybrominated diphenyl ethers -PBDE) in electrical and electronic equipment after 1 January 2008. It provides a list of exemptions for certain components where currently no substitutes are available and sets out a committee procedure for adding and removing exemptions and for agreeing acceptable levels of substances in specific materials and components.

c) Draft proposal for a directive on design and manufacture of Electrical and Electronic Equipment (EEE directive), 2nd draft

The proposed directive regulates the design and manufacture of Electrical and Electronic Equipment (EEE) in order to ensure that the overall impact of the equipment on the environment is minimised. The directive would require equipment design and manufacturing to be improved so that the overall adverse impact on the environment during the entire life cycle is being reduced.

If adopted, the directive would require manufacturers to apply the following principles:

- Avoid the use of devices, components and materials that are threatening the environment when disposed together with ordinary waste.
- Minimise the adverse impact on the environment by facilitating maintenance, repair, disassembly, re-use and waste management.
- Minimise or control pollution during normal use of the equipment.
- Minimise energy consumption during normal use of the equipment.

The manufacturer would have to incorporate either an internal design control or implement an environmental management system. After placing EEE on the market, the manufacturer would have to keep available all relevant documents related to the conformity assessment for 10 years after it stopped production of EEE.

2.2 Laws in Germany

a) ITVO

Germany has prepared a draft ordinance on the take-back and disposal of office, information and communication equipment (IT-Altgeräte-Verordnung):

Producers and importers will be obliged to take back discarded IT appliances from central collection sites for recycling, treatment and disposal according to the specifications of the German “cycle economy law” (Kreislaufwirtschafts- und Abfallgesetz). Landfilling of IT equipment that has been separately collected will be forbidden. The draft ITVO contains an obligation for the last owner to bring back his discarded IT appliances. Public authorities have to collect waste electrical and electronic appliances from private households and keep them ready for transport to the recycler. Producers and importers will have to bear the costs for treatment of WEEE that will arise after the ITVO enters into force, but not for “historical” waste.

This draft is not discussed at the moment, as with the adoption of the EU directives decribed above the ordinance will have to be adjusted or rewritten almost entirely.

3. Regulation about substances contained in products in the electrical/electronics industry

The following regulations listed in Annex II were put together by ZVEI (Zentralverband Elektrotechnik- und Elektroindustrie e.V.) and are containing restrictions and bans relating to specific substances.

3.1 Voluntary initiatives and commitments in Germany

Voluntary commitments are used on a national level therefore the focus was put on Germany. A large number of voluntary commitments were signed by the industry but none specifically focuses on recycling of WEEE. Out of a list of voluntary commitmnts assembled by the BDI, the following voluntary commitments are related to EEE:

- BDI and 15 members: Voluntary commitment to lower 20% of CO_2 emissions or specific energy use till the year 2005. Base year was 1990 (95/96).
- ZVEI: Voluntary take-back and recovery of electric and electronic products from IT, office communication and similar products (95). According to Baum-Rudischhauser (2000), the voluntary agreement is not valid anymore.
- Gesamtverband kunststoffverarbeitende Industrie e.V.: Voluntary labelling of PVC products (since beginning of the 90s). Makes recycling easier.

Apart from these voluntary commitments there have been various intiatives by industry organisations that fit in the context of this paper. The European association for standardising information and communication systems (ECMA) has produced a Technical Report (TR/70 - Product-related environmental attributes), which contains a catalogue of product parameters related to the environment. In preparing this report an attempt has been made to take into consideration those attributes that are environmentally significant and of current interest to the general public. The parameters have been put into self-declaration data sheets, which can then be used by manufacturers and suppliers for the marketing of their products. ECMA TR/70 contains examples of these supplier declarations for a variety of products IT-products.

VDI (Verein deutscher Ingeneure) has released a guideline for easy disassembly to ease recycling (VDI 2243). The report and the guideline will not be further discussed because they only recommend manufactures to include parameters related to the environment in product data declarations and specifications.

3.2 Eco-labeling in the EU (incl. Germany)

In Germany and the EU co-exist a large number of IT related eco-labels, like TÜV ECO Circle 2000 (2000), the European Eco Label for PCs and notebooks (2000) or the German Blue Angel (2000) for several IT-products. The European Eco Label for PC and Notebooks and the German ECO label TÜV ECO Circle 2000 are requesting a supplier's declaration according to ECMA TR70.

A product that bears the Blue Angel must automatically comply with the guideline of the VDI that was described above. For further detail please refer to the discussion paper: "Eco-labeling and green procurement schemes of IT-products in Germany / Europe".

4. Ecological effectiveness

Ecological effectiveness is the extent to which a policy instrument achieves its environmental goal.

Here the following three European directives (WEEE, ROS, EEE) shall be discussed. Their targets are mainly to prevent waste from EEE, to reuse, recycle, or aim at other forms of recovery of such waste and to minimise risks and impacts to the environment. No specific targets are set, e.g. percent reduction in CO_2 emissions. The ecological effectiveness is bound to be an ex ante qualitative assessment as all the directives are not yet in place. The assessment will cover all stages of the lifecycle of EEE. Hereby a distinction between the two main components of EEE, metals and plastic will be made.

4.1 Material acquisition

Raw materials are extracted from the environment, mostly via mining or drilling, which often requires moving large amounts of materials from one place to another and separating a small amount of useful ore from a large amount of useless material. This leads to the use of energy and the generation of waste. An important aspect is the degradation of natural ecosystems due to the physical interventions.

- The **WEEE directive** will have an impact on this phase because through recycling, metals are getting back for reuse. The natural resource stock of metals may be finite but the material stock is potentially infinite with an appropriate recycling system. So metals will be kept in a

cycle. The Material Input for secondary metals is lower than for primary (Schmidt-Bleek, Tischner, no year).
- The **WEEE directive** might extend the cycle period of plastics. But in the end the cycle period of plastic is finite and it has to be disposed or incinerated.
- The effects of the **ROS directive** depend on the substitutes for banned substances. Some might have a bigger MI-Value some a smaller.
- For the **EEE directive** it is too early to comment.

4.2 Manufacturing

The production of materials for IT products mostly takes place in the chemical and metallurgical industry and the production of the electronic components mainly takes place in the electronic industry. Main environmental aspects are the use of energy and emissions during the production processes and the generation of waste. According to a study of Kleijn et al. (1999), emissions associated with the making of circuit boards are mainly metals discharged through process water (Cu, Sn, Ni, Pb), organic matter discharged through water and solvents. The production of the non-electronic components takes place in production and manufacturing plants outside the electronic industry. The main environmental aspects of this are the use of energy during the production.

The **WEEE directive** will not change energy use because it is not affecting the production processes. Re-use, a possibility to lower energy consumption in the production process, is often impossible. The rapid rate of technical change limits the scope for component re-use, which furthermore has its limits. An integrated design is often more ecological, because of a lower use of chips than by re-using components.

- The **WEEE directive** might effect that products are built for reuse or long-time use, to keep them out of the recycling process as long as possible.
- The effects of the **ROS directive** to the environment have to be viewed from two angles. The Commission believes that the directive is driving producers not to use hazardous substances. The AEA (American Electronics Association) and the EIA (Electronics Industries Alliance) believe that banning may result in a net negative environmental impact by forcing more detrimental substitutes than the substances they replace.
- The **ROS directive** will rise the energy costs because of higher melting points of the solders.
- For the **EEE directive** it is to early to give a comment.

4.3 Use / reuse / maintenance

According to a study of the Brunel University, life cycle analyses of several EEE have shown that the use phase carries the lion’s share of the overall environmental impact of the appliance, followed by the phase of materials production. In contrast, other studies report that the disposal

has the smallest environmental impact (Frey/Harission, 1999). According to Kleijn et al. (1999) during normal use of the electronic consumer goods there are virtually no other environmental impacts than the GHG emissions associated with the electricity consumption. More than half of this use is completely unnecessary (standby). For battery operated products the production of waste batteries will be another important aspect (Kleijn et al., 1999).

- The **WEEE directive** is not designed to effect the use phase.
- The **ROS directive** might not effect the use phase. But long time effects from changes to lead free solders on the reliability of the products cannot be excluded.
- The **EEE directive** aims to minimise the impact on the environment, energy, and pollution. It is too early to analyse further effects, because the first draft is still in discussion and the effects from the other two directives are not yet known for sure.

4.4 Transport

It has to be distinguished between the transport from manufactures to the consumers and the transport from consumers to the recyclers.

- The three directives will not effect the logistic process from manufactures to the producers.
- According to Hansen/Mayer (2000) the logistic costs today are up to 70% of the whole recycling costs. Thus it is evident that there is great potential for optimisation. A higher recycling rate forced by the **WEEE directive** will effect more traffic. Intelligent reverse logistics have to be found and will be encouraged by increased amounts of WEEE.
- The ROS and the EEE directive will not effect the reverse logistic.

4.5 End of life management

According to the North Rhine-Westphalian State Environment Agency (1997), end of life management of EEE carries the problem that incineration of non-hazardous substances has been identified as the largest source of emissions of dioxins and furans into the air in Europe. According to a study by the Federal Environmental Agency Austria and the Municipal Department 22 (1994), the introduction of (small) WEEE into incinerators results in high concentration of metals, including heavy metals in the slag, in the flue gas or the filter cake. Leaching and evaporation of hazardous substances on uncontrolled landfills is another main problem.

- The **WEEE directive** will reduce the problems mentioned above.
- Practicable recycling systems have to be developed first before the **WEEE directive** will effect product design toward green design. Kopacek/Sallhofer (2000) refer to the problem that systems for detecting the brand are not available yet and no bonus for green design can be given to manufactures.

- Dioxins and furans are as well generated during the recycling process of plastics. Halogenated substances contained in WEEE, in particular brominated flame retardents are also of concern during the extrusion of plastics, which is part of the recycling. According to Brenner, the presence of polybrominated flame-retardants in plastic makes recycling dangerous and difficult. As a consequence, the German chemical industry stopped the production of these chemicals in 1986 (Brenner/Knies, 1986; Sellstrom, 1996).
- The **WEEE directive** forces the recovery of metals for secondary use. The benefits are described in the chapter on 4.1 Material acquisition.
- Recycling of hazardous products has little environmental benefit – it simply moves the hazardous substances into secondary products that eventually have to be disposed of. The **ROS directive** will limit the containing of hazardous substances in IT-products. The emission of hazardous substances during incineration and landfilling will be lowered
- The work intensive and expensive process in recycling is the disassembling process, not the shredding process. According to the draft proposal of the **EEE directive** disassembly should be possible by normally available tools in order to make manual disassembling activities less time consuming and inexpensive. Summing up, the effort for disassembly depends on the complexity of the appliance, the delectability and accessibility of connecting parts, the number of connections, the variety of connecting parts, the number of components, tool requirement and the automation of disassembly (Hoffmann et al., 2000). Higher recycling rates could be achieved through the **EEE directive** because of easier disassembling.

5. Economic effectiveness

In this chapter the economic effects of the directives proposed on the supply industry, producers, customers, recycling industry and the authorities will be discussed. This does not include the first draft of the EEE- directive, as it is still in discussion.

Generally it has to be pointed out that the costs of recovery are likely to vary widely between different items. Little is known about the costs of recycling small household appliances, medical, monitoring and control equipment etc. Costs related to recycling are depending on the recycling rate. It is assumed that recycling rates as proposed in the **WEEE directive** will be reached.

5.1 Effects for the supply industry

- Production costs for the virgin material can be saved by using secondary material. The price difference will determine which source the producers will tap.
- Still no universal substance replacing lead was found. According to Kopacek (SAT Austria) the **ROS directive** will have a big impact on the product chain. As a segment the supply industry must produce the same component with different substances because each company has its own approach on the substances used instead of lead. This will result in higher costs for the electronic parts and will end in higher prices for the manufacturing industry and consumers.
- Lead-free soldering will change the material composition of printed circuit boards and the soldering processes as well. Nowadays prices for lead-free solders are generally higher than

for the conventional tin-lead solders but this may change in the future. The market is still moving. In solder pastes, metal cost is only a minor percentage of product prices. Thus, increases in metal cost up to 400% increase will increase solder paste prices by up to 30% (Deubzer et al., 2000).
- Changes in the production process can be paralleled with normal update, which are technically required.

5.2 Producers

Costs and savings effected by the supply industry will be given to the producers as well.

The **WEEE directive** will have at least three positive effects:

- Production costs can be reduced by using secondary material. The price difference will determine which source the producers will tap (the same as for the supply industry).
- Disposal costs can be reduced. Due to increased recycling rates less space for land filling will be needed.
- Cost minimising will be affected by better design in the future due to the feedback mechanism of producer responsibility.

Negative effects might be:

- Distributor take-back will impose storage, transport, administration and training costs upon companies. Costs are likely to vary dependent upon the type of appliance. Take-back costs may also vary between different types of distributor (e.g. mail order firms). Storage costs may be higher for small retailers who have less space. Firms have expressed concerns about the health and safety consequences of waste storage. There may be intangible effects e.g. pejorative implications of being associated with waste. The directive's take-back requirements might require distributors to have a waste management license.
- It is required to communicate information about return and collection systems and the role of the member states in contributing to re-use, recycling and other forms of recovery to householders. If this were included in the instruction manual when it is (re-) printed the cost is likely to be small. For existing products, rather than reprint the manual a flyer could be included.
- Producers also have to label certain products with the crossed out wheelie-bin symbol. If this were done as part of the normal mould replacement cycle the cost would be negligible. Outside the normal replacement cycle the cost per mould is rising. A longer lead-in time is likely to lower the cost of this requirement. Other marking methods (e.g. some form of label) may alter the costs of this requirement.

The effects of the **ROS directive** might be:

- Using more valuable metals on the PCBs will reduce the PCB recycling costs and thus might trigger higher recycling rates. Secondary metals normally are less energy intensive than primary metal. Thus more recycling of PCBs with metal recovery might also compensate the higher energy consumption for the metal production.

5.3 Consumers

The Commission expects average recycling cost for household equipment in a range of 200 to 400 Euro a ton. The EU estimates an average impact on costs for covered equipment on the order of 1%. The ZVEI is expecting 5%. Another fact is that the prices for IT-products in Europe are attached to the dollar. This year (2000) the prices on computers in Europe raised up to 4% by the weakness of the Euro. So the raising is within a normal range. This cost increase is likely to be temporary, however, as producers improve the efficiency of products with regards to reuse and recovery of components.

5.4 Recycling industry

The following cost and benefits might effect the recycling industry:

- In the light of the drive for increased recycling and recovery, as set out in the EU waste strategies, it is possible that sufficient facilities for certain items will exist in the absence of this proposed directive. Some collection facilities may require additional receptacles (e.g. WEEE bins at civic amenity sites). The requirement for collection facilities to be available even in areas from which collection is relatively expensive may restrict the scope to focus on the lowest cost WEEE.
- Most sites will already be subject to waste management licensing (or an exemption) and are likely to meet most of the requirements. There may be other costs, such as for treating water and purchasing scales. Similarly, if the definition of treatment encompasses civic amenity sites, there may be costs in adapting this.
- Raising recycling rates for some appliances might increase profits. This is unlikely to be the case, as recyclers would otherwise increase their recycling rate to raise their income. This discrepancy probably results from the assumption that sufficient markets for recycled material exist at present and that they operate efficiently.
- Some aspects of the costs may decrease over time, due to the phase out of certain substances (e.g. CFCs). However, the requirements may become less appropriate due to changes in product design or recycling technologies. This could increase costs over time.

5.5 Authorities

- The total administration costs of funding the collection, treatment and recovery of WEEE will depend upon implementation methods.
- Space for take-back places has to be provided.

6. Policy co-ordination

This part intends a look into the future, where policy co-ordination will be necessary. A straight answer is difficult, because the Japanese part of this paper is not known at the time of writing. Generally, a patchwork of unrelated national regulations should be avoided. National regulations (EU, Japan, Taiwan) should be as compatible as possible. This must involve companies, NGOs and governments on an international scale in developing global standards and regulations.

Policy co-ordination is particularly useful when it comes to prohibitions of substances. Besides reducing risk, prohibitions have several advantages, namely: they are easy to administer and monitor, they work ex ante by eliminating the problem before it is created, thus avoiding the need to worry about collection and treatment later, and they can be applied in a completely non-discriminatory way. In other words, all products, no matter which country they are from or whether they are domestic or foreign, are affected equally by a ban. In this way, a prohibition can formally conform with Articles I and III of the GATT (on non-discrimination). On the other hand, bans are unavoidably trade-restrictive in that they automatically function as an import prohibition on the banned product. Import prohibitions contradict the core principle not to put quantitative restrictions on trade as laid out in Article XI of the GATT. From this perspective, all bans are trade-restrictive and, therefore, violate the international trade rules, unless they only apply to products that are not traded internationally (very few). That is why the EU Committee of the American Camber of Commerce claims that the ROS directive would be an explicit barrier to trade under the WTO rules. The WEEE directive would also inhibit the free trade because its financial obligations on manufactures could create a disincentive for non-EU based companies.

7. Summary & Conclusion

This paper took a look on the existing and upcoming policy mix in Europe and especially in Germany that rules manufacturers to take back used IT-products, to re-use components or recycle them. In the draft WEEE directive a mass based definition of recyclable is used. As underlying goals for the legislation, waste reduction, potential toxicity reduction, environmental effects and exhaustion of resources and value recovery are mentioned.

The proposed ROS directive aims to harmonise the laws of the member states on restrictions on the use of lead, mercury, cadmium, hexavalent chromium, and certain flame-retardants (polybrominated biphenyl’s - PBB; and polybrominated diphenyl ethers -PBDE) in electrical and

electronic equipment, and to contribute to the environmentally sound recovery and disposal of WEEE.

The proposed EEE directive intervenes in the design and manufacture of Electrical and Electronic Equipment in order to ensure that the overall impact on the environment is minimised. The directive would require equipment design and manufacturing to be improved to reduce the overall adverse impact during the entire life cycle.

The general point of view is that the WEEE directive and the ROS directive will have an impact on the IT industry. The main effect will be structural. Take-back schemes have to be developed, recycling processes developed and improved. This will effect higher costs. The costs will also rise because of more expansive solders and a higher energy use during the melting process.

For both directives the EU is expecting that product costs rise by 1-3%. This is quite small compared to the fact that the prices went up 5% because of the weakness of the Euro.

An environmental improvement, however, is questionable. The extraction from the environment will be less because through recycling metals are getting back for reuse. The environmental benefits effected by the recycling of plastic are questionable. The emissions emitted by landfilling and incineration will be lowered in general but might have a more detrimental impact.

The WEEE and the ROS directives might effect an ecological thinking in the manufactures industry.

Changes in product design and manufacturing process are questionable if the EEE directive will not be released, because the main driver for producers is customer requirements. According to Johansson et al. (2000), **individual** customers are not viewed as the drivers for environmental improvements in the computer industry. Take-back regulations are not seen as the main drivers as well (see also Frey, 2000).

As long as the use phase contributes the lion’s share to the overall environmental impact of the appliance, the stakeholders should not only force recycling and reuse laws. Laws forcing lower energy use during the use phase should be developed as well to reach the goal of green IT-products. The EEE-directive is the first step.

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Annex

Table 1: EU threat an EU directives

Directive	**Description**
Article 95 European Threat	is the legal base for concerning chemicals
Article 174 European Threat and Article 175 European Threat	Is about the protection, preserving and improving the quality of the environment, the protection of human health, prudent and rational utilisation of natural resources and the promotion of measures at international level to deal with regional and worldwide environmental problems
Directive 67/548/EC	On the approximation of laws, regulations and administrative provisions relating to the classification, packing, and labelling of dangerous substances
Directive 73/23/EEC	on harmonisation of the laws of the member states relating to electrical equipment designed for use within certain voltage limits
Directive 75/442/EEC (as revised by directive 91/156/EEC)	and 91/689/EEC provide the overall structure for an effective waste management regime within the EU. It is often referred to as the Framework directive on Waste,
Directive 80/778/EC	on quality of water intended for human consumption
Directive 86/278/EEC	on sewage sludge use in agriculture
Directive 89/369/EEC	Prevention of air pollution from waste incinerators
Directive 89/429/EEC	Prevention of air pollution from waste incinerators
Directive 91/157/EEC adapted by directive 98/101/EEC	looks at ways of reducing the amounts of potentially toxic heavy metals used in the production of batteries and accumulators, while increasing controlled disposal and recycling through more effective product labelling.
Directive 96/59/EC	On the disposal of PCB/PCT
Directive 96/350/EC	Is adapting Annexes IIA and IIB to Council directive 75/442/EEC on waste
Directive 1993/31/EC	on the Landfill of Waste, aims by way of stringent operational and technical requirements to prevent and reduce as far as possible negative effects on the environment
Directive 1999/468/EC	Regulation about importing fish products from Columbia.
Basler Convention	Regulation about hazardous waste shipment
Directive 2000/0158(COD)	Waste Electrical and Electronic Equipment
Directive 2000/0159(COD)	Restriction of the use of certain hazardous substances in electrical and electronic equipment
	Draft proposal for a directive on design and manufacture of Electrical and Electronic Equipment (EEE)